

Claims

1. A turbocharger having an exhaust housing (7; 107; 207; 307;  
5 507) and a variable nozzle device comprising vanes (27; 127;  
227; 327; 527) interposed in a nozzle between a nozzle element  
(21; 121; 221; 321; 521) and a floating insert (17; 117; 217;  
317; 517) being supported axially slidably with respect to said  
exhaust housing (7; 107; 207; 307; 507).  
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2. A turbocharger according to claim 1, wherein the floating  
insert is urged against the vanes (27; 127; 227; 327) of said  
vane area by a difference in the pressure in an exhaust gas  
inlet and the nozzle.  
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3. A turbocharger according to claim 1 or 2, wherein the floating  
insert is urged against the vanes (27; 127; 227; 327; 527) by a  
biasing member (43; 143; 343; 543).  
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4. A turbocharger according to claim 3, wherein said biasing  
member is a spring washer (43; 143) placed in a recess (41;  
141) formed in a gas outlet shroud portion (19; 119) of the  
exhaust housing (7; 107; 207; 307; 507).  
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5. A turbocharger arrangement according to claim 3, wherein said  
biasing member is a spring washer placed in a recess (341)  
formed in said floating insert (317).  
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6. A turbocharger arrangement according to claim 5, wherein said  
floating insert (317) is formed of a sheet metal and has a C-  
shaped cross-section which, together with the exhaust housing  
(7; 107; 207; 307), defines said recess (341).  
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7. A turbocharger arrangement according to any of claims 4 to 6,  
wherein said recess (41; 141; 341) is communicated to the  
exhaust gas inlet of said exhaust housing (7; 107; 207; 307).

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8. A turbocharger arrangement according to one of claims 3 to 7,  
wherein the nozzle element (21) is clamped between a step  
portion (25) of an inner periphery of the exhaust housing (7;  
107; 207; 307) and a disc-shaped member supported on a center  
5 housing (1) of the turbocharger.

9. A turbocharger arrangement according to one of claims 3 to 7,  
wherein the nozzle ring (21; 121) is abutted against said  
10 exhaust housing (7; 107; 207; 307; 507) by means of first  
spacer elements (145; 245; 345) passing through the floating  
insert (17; 117; 217; 317; 517).

10. A turbocharger arrangement according to any of the preceding  
15 claims, wherein the floating insert (17) is abutted against a  
second spacer element (45) by said biasing member, said second  
spacer element (45) being supported on the nozzle ring (21).

11. A turbocharger arrangement according to any of the preceding  
20 claims, wherein a piston ring (39; 139; 339 ) is provided  
between the floating insert and a gas outlet shroud portion  
(19; 119; 319) of the exhaust housing (7; 107; 207; 307).

12. A turbocharger arrangement according to claim 11, wherein the  
25 piston ring (39; 139; 339 ) is received in an annular recess  
either of said floating insert or said exhaust housing (7; 107;  
207; 307).

13. A turbocharger arrangement according to claim 1, comprising  
30 the floating insert (517) having a flange (518) which is  
interposed between the exhaust housing (507) and a center  
housing (51) of the turbocharger in a floating manner;  
locking means (537) for preventing the floating insert (517)  
from rotating relative to said center housing (51) and relative  
35 to said exhaust housing (507); and

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a spring member (543) for urging the floating insert (517)  
against the vanes (527).